SOUTH CAROLINA
STATE DEPARTMENT
OF EDUCATION

South Carolina Department of Education Support for Implementing the Common Core State Standards for Mathematics

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SOUTH CAROLINA
STATE DEPARTMENT
OF EDUCATION

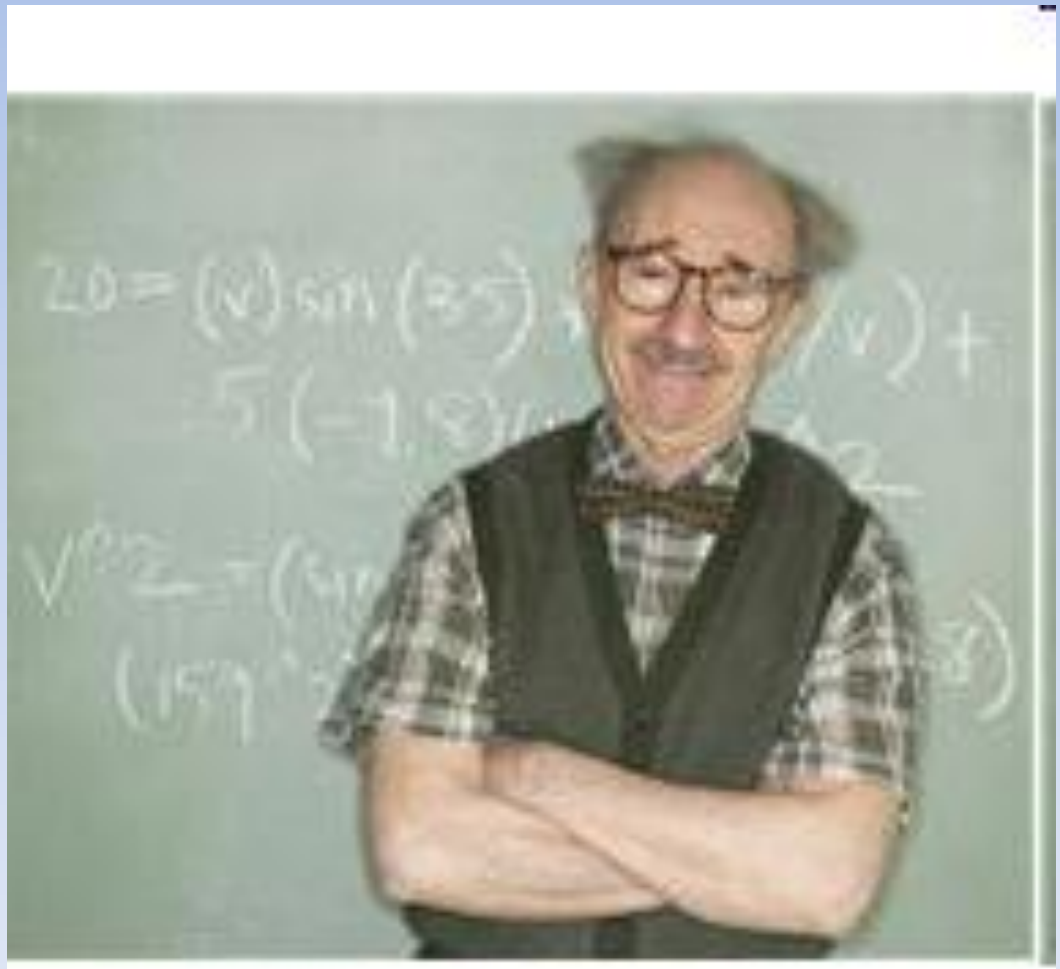
Office of Teacher Effectiveness
Content Knowledge Team

"STEM" - Science, Technology, Engineering and Mathematics

Introductions

Presenters

Table Teams



Participants on site are currently introducing themselves in table teams. We will resume the live Web cast in approximately 5 minutes.

You may want to use this time to download materials needed for active participation.

Tying It All Together. . .

Continuous, Sustained PD

February

Process to closely review CCSSM content standards

March

Process to examine how content and practices build across grades

April/May

Process to compare instructional practices and adapt materials

Questions We Will Answer in Today's Session

How do we begin to make shifts in instructional practices?

- **What do our current instructional practices look like compared to expectations in CCSSM?**

- **Will we know it when we see it?**

- **What do we do with our current bank of lessons or curriculum guides?**

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ? = 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ? + 3 = 5
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = ?	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 – ? = 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ? – 2 = 3

	Total Unknown	Addend Unknown	Both Addends Unknown[1]
Put Together/ Take Apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 – 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[3]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 – 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 – 3 = ?, ? + 3 = 5

Analyze Questions to Determine Entry Points for Solving

Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now?
(Result Unknown)

Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two?
(Change Unknown)

Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before?
(Start Unknown)

Analyze Questions to Determine Entry Points for Solving

Susan was shopping and saw a $160 item on sale at 25% off. She wanted to know how much she would save so she asked the clerk 25% of $160 is what?
(Result Unknown)

Susan was comparing prices and saw an item on sale for $120. The original price was $160. The sale price is what percent of the original price?
(Change Unknown)

What do our current instructional practices look like compared to expectations in CCSSM?

Common Core State Standards - Addition Vertical Articulation Grades K-8

1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Concept - Addition	**Concept - Addition**	**Concept - Addition - Whole Numbers**	**Concept - Addition – Whole Numbers**	**Concept – Addition – Whole Numbers**	**Concept - Addition – D**
Fluently add within 10 1.OA.6 Using strategies such as • Counting on • Make ten • Decomposing a number leading to a ten • The relationship between addition and subtraction • Creating easier or known sums Add within 20 1.OA.6 Using strategies such as • Counting on • Make ten • Decomposing a number leading to a ten • The relationship between addition and subtraction • Creating easier or known sums • Applying properties of operations (Associative and Commutative) 1.OA.3 Solve word problems with unknowns in all positions 1.OA.1 (See Glossary Table 1) • Use 3 or less whole number addends (total 20 or less) • Represent the problem using o Objects o Drawings o Equations with a symbol for the unknown number ▪ Determine the unknown number in an addition equation 1.OA.8 Relate counting to addition 1.OA.5 Counting on 2 to add 2	Fluently add within 20 using mental strategies 2.OA.2 Strategies such as • counting on • making ten • decomposing a number leading to a ten • Using the relationship between addition and subtraction • Creating equivalent but easier or known sums Write an equation to express an even number as a sum of two equal addends (up to 0) 2.OA.3 By the end of grade 2 know from memory all sums of two 1-digit numbers 2.OA.2 Fluently add within 100 2.NBT.5 Add up to four 2-digit numbers 2.NBT.6 Using strategies based on 2.NBT.5 and 2.NBT.6 • Place value • Properties of Operations and/or • Relationship between addition and subtraction Explain why the strategies work 2.NBT.9 • Explanations may be supported by drawings or objects (footnote 3) Solve one and two-step word problems 2.OA.1 • Unknown in all positions • Represent the problem using drawings and equations with a symbol for the unknown number • Involving lengths that are	Fluently add within 1000 3.NBT.2 Using • Strategies and algorithms based on place value • properties of operations, and/or • Relationship between addition and subtraction. • Place value understanding to round whole numbers to the nearest 10 or 100 3.NBT.1 Solve two-step word problems using the four operations. 3.OA.8 • Represent the problems using equations with a letter standing for the unknown quantity. • Use Order of Operations • Assess the reasonableness of answers using mental computation and estimation strategies including rounding • Identify arithmetic patterns (including patterns in the addition table or multiplication table), and • Explain them using properties of operations. 3.OA.9	Fluently add multi-digit whole numbers 4.NBT.4 Use the standard algorithm Solve multistep word problems using the four operations, including problems in which remainders must be interpreted. 4.OA.3 • Represent the problems using equations with a letter standing for the unknown quantity • Assess the reasonableness of answers using mental computation and estimation strategies including rounding. o Use place value understanding to round multi-digit whole numbers to any place. 4.NBT.3 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. 4.OA.5 **Concept - Addition – Fractions** (Addition and subtraction with unlike denominators in general is not a requirement at this grade.) 4.NF.5 Add mixed numbers with like denominators 4.NF.3c By • Replacing each mixed number with an equivalent fraction, and/or • Using properties of operations and the relationship between addition and subtraction. Understand a fraction a/b with a	*Note: Addition with whole numbers is not mentioned in the 5th grade standards but will naturally be included in student work. However, it should not be a focus for teaching because based on 4.NBT.4 students should be fluent with addition and subtraction of whole numbers by the end of 4th grade.* **Concept - Addition - Decimals** Add decimals to hundredths 5.NBT.7 Using • Concrete models • Drawings • Strategies based on o Place value o Properties of operations and/or o The relationship between addition and subtraction o Relate the strategy to a written method and explain the reasoning Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols 5.OA.1 • Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them 5.OA.2 **Concept - Addition – Fractions** Add fractions with unlike denominators (including mixed numbers) 5.NF.1 Use equivalent fractions as a solving strategy	Fluently add, subtract, and divide multi-digit 6.NS.3 Use the standard algo each operation *NOTE: The following were selected from the Expressions and Equat Domain . In order to m intent of the standards Domain, standards tha more than the concept may be included.* Use variables to repres numbers and write exp when solving a real-w mathematical problem Understand that a vari represent an unknown or, depending on the p hand, any number in a set. Write and evaluate nu expressions involving number exponents. 6. Evaluate expressions a values of their variable these symbols. • Include expressi Strategies and a based on place v • Perform arithme operations, inclu involving whole- exponents, in th conventional orc there are no par specify a particu Solve real-world and mathematical problem writing and solving eq the form $x + p = q$ and

Questions to Guide Table Group Sharing

With regard to

1. **Content, does your text address the expectations of CCSS?**
    a. **CCSSM expects. . .**
    b. **The texts expects. . .**
2. **Problem Solving**
3. **Level of Cognitive Demand**
4. **Your Questions**

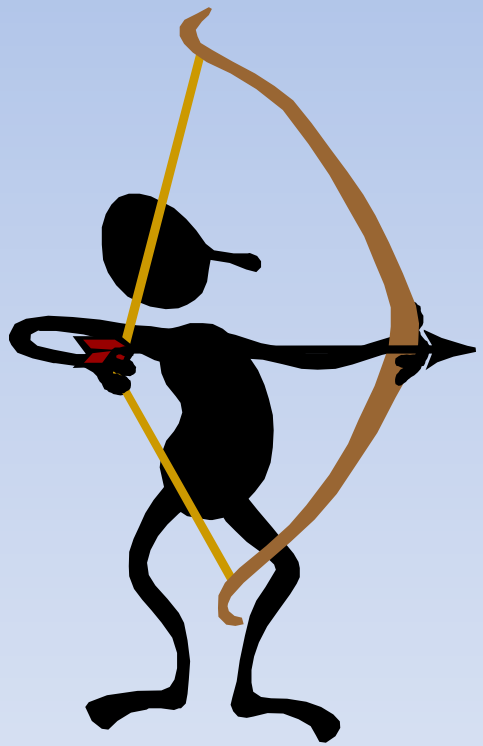
Record on Chart Paper – include your grade and text series

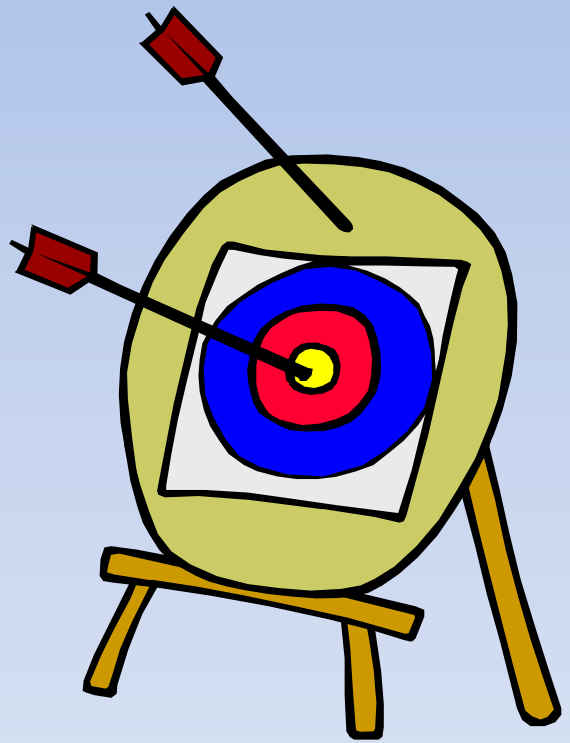
Teams are now in a work session. We will resume the Web cast in approximately 30 minutes.

If you downloaded the "Questions for Comparing Current Instructional Practices" now is the time to use it as you review your instructional materials.

Do you Know It When You See It?

GALLERY WALK: STANDARDS MATCH





Teams are now in a work session. We will resume the Web cast in approximately 20 minutes.

Teams are matching questions that could be posed to students in the classroom to standards.

Relationship between Questions and Instructional Materials

1. How do the questions from the gallery walk compare with what you saw in the instructional materials?

2. What does this say about needed instructional shifts?


Lunch

What do we do with our current bank of lessons or curriculum guides?

1. **How was that experience valuable to you?**

2. **What is the teacher benefit in writing or modifying lessons compared to being handed a lesson they have to use?**

The process is more valuable than the final product!

What should I do with the current bank of lessons or curriculum guides?

Share them?

CCSSM -- 6.NS.4

2007 -- 5-2.7

Generate strategies to find the GCF and the LCM of two whole numbers.

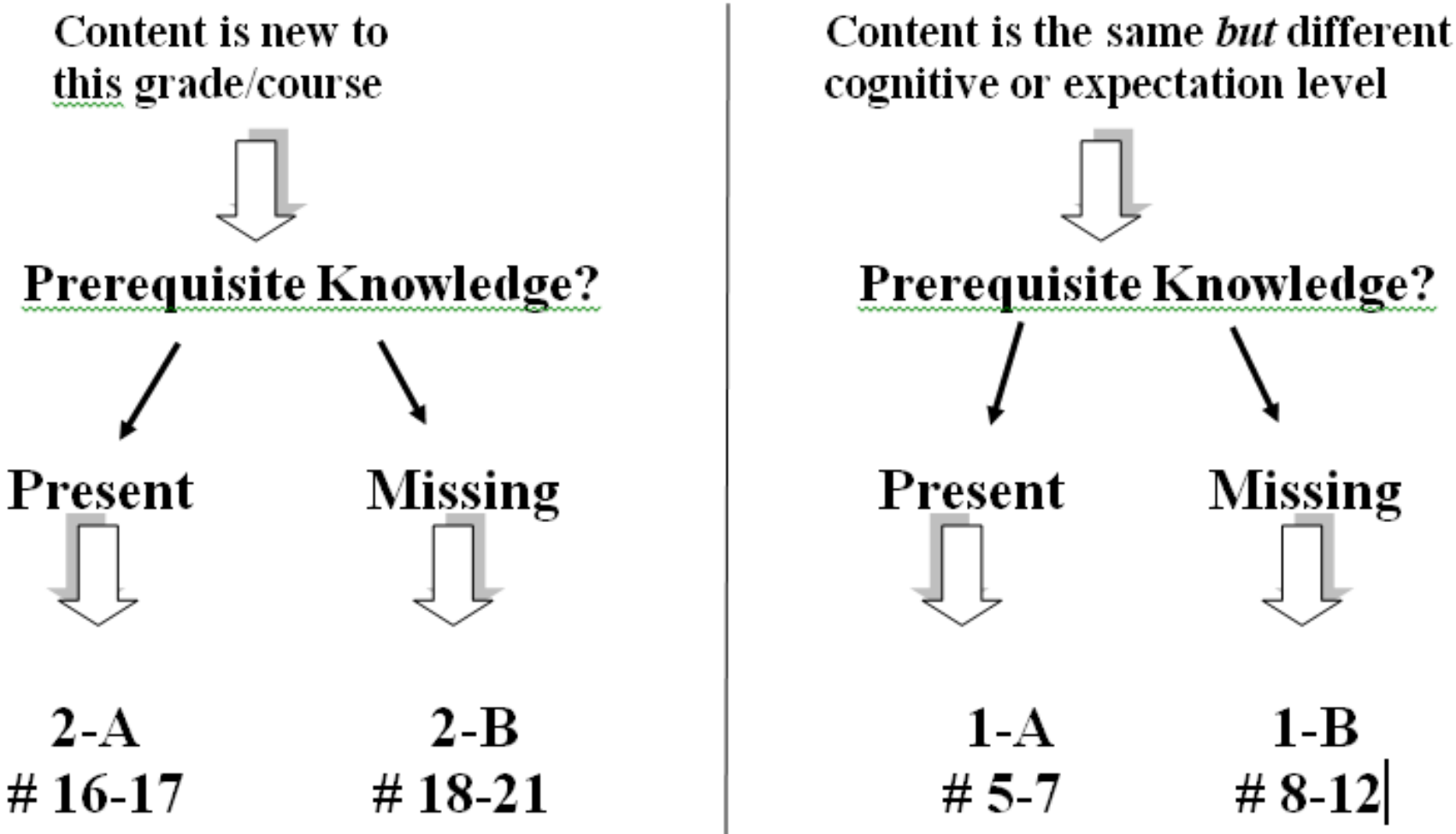
Trash them?

CCSSM -- 1st grade vertical articulation of +

2007 -- *Generate strategies. . .*

Modify them?

Transition Strategy Graphic



What do I do with the current bank of lessons or curriculum guides?

1. Look at CCSS 5.NBT.3

2. Read the 2007 Standard addressed by Lesson B from 5th grade Module 1-1 of the "S3" document.

   Should we follow Path A or B on the Strategy document?

3. Do we use Guiding Questions I or II?

What do I do with the current bank of lessons or curriculum guides?

1. With your table group work through the guiding questions in Section I.

2. Make changes to Lesson B by marking through unnecessary information and adding information you deem appropriate.

3. Be prepared to share.

Teams are now in a work session. We will resume the webinar in approximately 20 minutes.

Participants are individually modifying a lesson. If you downloaded the Transition Strategy you may use this time to modify a lesson of your choice.

Share Out

Could these same questions be used when a new lesson is written? Why or why not?

Reminder: It is not important to use this process as long as a process is provided that will guide teacher's thinking.

Which mathematical practices does this Lesson give students an opportunity to experience? Could there be more?

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SEDL
http://secc.sedl.org/common_core_videos/index.php?action=view&id=739